

**What is Claimed is:**

1           1.    A method for handing over of a connection from a  
2   first serving GPRS support node (SGSN) to a second SGSN in  
3   response to an inter SGSN routing area update, the method  
4   comprising the steps of:

5                operating the first SGSN as a temporary anchor in  
6   response to the inter SGSN routing area update; and

7                redirecting signaling traffic to and from the  
8   second SGSN via the first SGSN while the first SGSN is  
9   operating as the temporary anchor.

1           2.    The method of claim 1, further comprising the step  
2   of initiating the inter SGSN routing area update in response  
3   to a mobile station moving from a first SGSN service area  
4   associated with the first SGSN to a second SGSN service area  
5   associated with the second SGSN.

1           3.    The method of claim 1, wherein the step of  
2   redirecting further comprises the step of establishing a  
3   temporary leg between the first SGSN and the second SGSN.

1           4.    The method of claim 3, wherein the step of  
2    redirecting further comprises the step of redirecting the  
3    signaling traffic from the first SGSN to the second SGSN via  
4    the temporary leg.

1           5.    The method of claim 3, wherein the step of  
2    establishing the temporary leg comprises the step of  
3    establishing a Gb channel between the first SGSN and the  
4    second SGSN.

1           6.    The method of claim 3, further comprising the step  
2    of transferring connection control from the first SGSN to the  
3    second SGSN in response to the connection being maintained by  
4    the first SGSN entering a standby state.

1           7.    The method of claim 6, wherein the step of  
2    transferring further comprises the step of performing the  
3    inter SGSN routing area update between a Gateway GPRS support  
4    node (GGSN) and the second SGSN.

1           8. The method of claim 6, wherein the step of  
2 transferring connection control is performed without  
3 interrupting layer 3 procedures and data transmission.

1           9. The method of claim 6, further comprising the step  
2 of releasing the temporary leg in response to completion of  
3 the transfer of connection control from the first SGSN to the  
4 second SGSN.

1           10. The method of claim 9, further comprising the step  
2 of communicating subsequent signaling traffic directly  
3 between a Gateway GPRS support node (GGSN) and the second  
4 SGSN without redirecting the subsequent signaling traffic via  
5 the first SGSN, the subsequent signaling traffic occurring  
6 after the release of the temporary leg.

1           11. The method of claim 6, further comprising the steps  
2 of:

3           allowing subscriber charging transactions to be  
4 completed towards a billing gateway before performing the  
5 step of transferring connection control to the second SGSN;  
6 and

7           resuming subscriber charging towards the billing  
8 gateway in response to completion of the transfer of  
9 connection control to the second SGSN.

1           12. A system for handing over of a connection between  
2 at least two GPRS nodes in response to an inter SGSN routing  
3 area update, the system comprising:

4           a first SGSN operating as a temporary anchor in  
5 response to the inter SGSN routing area update; and

6           a second SGSN in communication with the first SGSN,  
7 the first SGSN redirecting signaling traffic to and from the  
8 second SGSN via the first SGSN while the first SGSN is  
9 operating as the temporary anchor.

1           13. The system according to claim 12, further  
2           comprising a mobile station operating in a first SGSN service  
3           area associated with the first SGSN, the inter SGSN routing  
4           area update being initiated upon the mobile station moving  
5           from the first SGSN service area to a second SGSN service  
6           area associated with the second SGSN.

1           14. The system of claim 12, wherein the redirecting of  
2           signaling traffic further including establishing a temporary  
3           leg between the first SGSN and the second SGSN.

1           15. The system of claim 14, wherein the redirecting  
2           further includes the step of redirecting the signaling  
3           traffic from the first SGSN to the second SGSN via the  
4           temporary leg.

1           16. The system of claim 14, wherein the establishing  
2           the temporary leg comprises establishing a Gb channel between  
3           the first SGSN and the second SGSN.

1           17. The system of claim 14, further including  
2 transferring connection control from the first SGSN to the  
3 second SGSN in response to the connection being maintained by  
4 the first SGSN entering a standby state.

1           18. The system of claim 17, wherein the transferring  
2 further includes performing the inter SGSN routing area  
3 update between a Gateway GPRS support node (GGSN) and the  
4 second SGSN.

1           19. The system of claim 17, wherein transferring  
2 connection control is performed without interrupting layer 3  
3 procedures and data transmission.

1           20. The system of claim 17, further comprising  
2 releasing the temporary leg in response to completion of the  
3 transfer of connection control from the first SGSN to the  
4 second SGSN.

1           21. The system of claim 20, further comprising  
2     communicating subsequent signaling traffic directly between  
3     a Gateway GPRS support node (GGSN) and the second SGSN  
4     without redirecting the subsequent signaling traffic via the  
5     first SGSN, the subsequent signaling traffic occurring after  
6     the release of the temporary leg.

1           22. The system of claim 6, further comprising:  
2                 allowing subscriber charging transactions to be  
3     completed towards a billing gateway before performing the  
4     step of transferring connection control to the second SGSN;  
5     and  
6                 resuming subscriber charging towards the billing  
7     gateway in response to completion of the transfer of  
8     connection control to the second SGSN.

1           23. A method for handing over of a connection between  
2   GPRS support nodes (SGSN), the method comprising the steps  
3   of:  
4           receiving a routing update;  
5           forming a temporary leg between an old and a new  
6   SGSN after receiving the routing update; and  
7           redirecting signaling traffic across the temporary  
8   leg.

1           24. The method according to claim 23, further  
2   comprising:  
3           releasing the temporary leg; and  
4           communicating subsequent payload traffic between a  
5   GPRS and and the new SGSN.

1           25. The method according to claim 23, wherein the old  
2   SGSN forms a temporary anchor.



1           26. The method according to claim 23, further  
2     comprising:  
3           communicating a context forward message from the  
4     old SGSN to the new SGSN;  
5           receiving a context forward acknowledgment from the  
6     new SGSN; and  
7           releasing the temporary leg after receiving the  
8     context forward acknowledgment.